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## Public Health and the Medical Practitioner\*

(PRESIDENTIAL ADDRESS)

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THERE are, in our community to-day, strong trends in the direction of more adequate social security. Such trends are not really new. They were clearly apparent during the interval between the two world wars. However, they have been greatly accelerated by the emergencies of the present conflict. It is during war that the real needs of ordinary people are likely to be most clearly crystallized and most vehemently expressed. It is when the community is forced by emergency to call for increased effort and sacrifice that the basic objectives of ordinary people are most plainly defined.

We, in the field of public health, do well at such a time to recognize the effect which these community trends are having and will have on our work. A community in search of security—reasonable security against unreasonable disasters—is demanding and will increasingly demand from us more than it has received in the past.

More adequate social security means many things. For us, it means more adequate protection against the social and financial disaster of preventable illness. This protection is becoming less and less a matter of sentiment. It is becoming more and more a matter of business. We, in public health, would do well to accept a business-like view and its implications. Good business depends on the presence of consumers who are able to buy. And consumers are able to buy only if they are employed and well. In this direct and obvious

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sense, good health is good business in any community—and as such it is worth paying for.

But like any other business proposition, it is only worth paying for if actual value is received for the money expended. Looking back over our record in public health, it can be argued that most communities have in fact received the kind of public health service they deserved in a business sense. Most communities have employed the part-time services of an already busy physician and many of them have received more than full value for their money. But often this is only true because of the small amount of money spent!

The previously hidden costs of preventable illness are now more generally recognized than ever before. Most communities know that they are paying heavy damages for health negligence. Consequently most communities are no longer willing to regard public health as merely the part-time and rather secondary preoccupation of a busy practitioner who, for a nominal fee, is usually able to render only nominal services.

Years ago, in communities without modern means of communication, it was not surprising that smaller municipalities gradually developed their own small-scale, part-time services as best they could. This excuse has long since disappeared. Under modern conditions, smaller municipalities can readily combine to form larger population units in areas still small enough to be readily accessible. And it is now generally agreed that the only way the modern community can maintain an adequate health service is to make business-like provision for the full-time services of a competent public-health executive.

The general provision of a full-time public-health staff will present to many of us in this field new and rather different problems. The most significant of these is the problem of ensuring fuller integration with the medical practitioners already hard at work in the community. It is to this problem that I would particularly invite your attention.

The full-time public-health officer of the future—indeed, of the very immediate future—will find that there is nothing more essential to the success of his work than the active and energetic co-operation of the physicians and nurses in the area he serves. He is no longer in the unhappy position of devoting a portion of his time and energy to the execution of underpaid services which are supposed to be almost solely the concern of the traditional medical officer of health. He will find himself in the position of devoting his full time and energy along lines which are at the same time the immediate concern—in greater or less degree—of every medical practitioner in the community.

This wider and fuller responsibility for the health of the public can only be met by a man who has adequate specialized training. That is obvious. What is perhaps not so obvious is that he will need much more than specialized training. No matter how much he may know, how well he may be informed, how many skills he may have in the established techniques of public health, he will be quite incapable of discharging his proper duties unless he can achieve

a fuller integration than in the past between the work of his department and the work of medical practitioners.

It is not good enough to talk vaguely about friendly relations and the ability to co-operate. It is too often assumed that this ability to co-operate effectively with other people in an allied field is an intangible quality which a man has or has not; that it is something you piously hope for; that it is something you can do nothing about.

This passive attitude is understandable but it is not entirely justified. There are conditions under which co-operation and integration are likely to develop. There are other conditions under which such co-operation and integration are not only unlikely but may be quite impossible. Two of these conditions should, I think, be given careful attention.

The first has to do with the selection of full-time public-health officers. Whatever the degree of their natural tact and ability to get along with other people, most public-health officers will be more successful in this aspect of their work if they themselves have had first-hand experience in the general practice of medicine. Just as the physician in private practice needs a working knowledge of the psychology of the human beings with whom he has to deal, so the public-health officer needs a working knowledge of the viewpoint and outlook, of the problems and difficulties, of the hopes and frustrations of practising physicians.

Furthermore, the actual practice of preventive medicine can never be easily or arbitrarily distinguished from the diagnosis and treatment of illness in general medical practice. On the contrary, if it is to be effective, preventive medicine must not be divorced and separated from the regular practice of medicine or from those who are carrying on that practice. Admittedly it is, to some degree, a separate task, and requires the attention of specialists with adequate training and sufficient time to devote themselves fully to this task. But preventive medicine must remain (or become) an integral part of general medicine. And the success or failure of the full-time, even more than that of the part-time medical officer of health, will depend on his ability to integrate the services of his department with those of the medical practitioners for whom and with whom he must work.

A second condition of effective integration has to do with the location of the full-time public-health unit. Just as the modern hospital is moving toward the community (and public health) with its increased provision for out-patient services and the supervised home care of certain types of illness, so the modern public-health service must move away from the town hall toward the community hospital.

In its present typical location, the public-health department too often becomes associated in the minds of the public with tax collectors, local magistrates, dog-catchers and other symbols of minor municipal restriction. More serious, it is often too far removed from the very people with whom and for whom it must work. Direct, frequent and natural contact with one's fellow workers is an important condition for integration and co-operation in any field of endeavour.

It is time to recognize that the personnel of a hospital and the personnel of a public-health department are in the same line of business—maintaining the health of the community. They will do better work if they get together.

In the "health centre" type of community hospital there is not merely the traditional provision for the treatment of the acutely ill: offices and co-operative laboratory facilities are available for physicians and dentists. There are extensive out-patient services and there is proper provision for full-time public-health workers. With the provision of such health centres the ideal of a proper integration between public health and private medical practice becomes a reasonable possibility.

The many ways in which preventive medical services can co-operate with the medical practitioner in such a centre are too numerous to specify in any detail. Among the more obvious is the instruction of the expectant mother before hospitalization, community assistance for maternity cases while in hospital, and very close co-operative follow-up after return home. There are the special diet cases to be followed after their return home. There is the supervision of post-operative cases and the effective integration of convalescent care with hospital consultation. There are the increased possibilities in the development of bedside nursing in the home. Indeed, there are endless ways in which the immediate availability of public-health services can be immensely helpful, not only in shortening the duration of hospitalization to whatever minimum is in the best interests of the patient, but also in rendering the remedial work of the hospital more effective by continuous follow-up.

The public-health officer, like the practising physician, is dependent in a very large measure on the nursing profession and it is in this field of effort particularly that a better integration between public and private services is urgently needed. The public-health nurse needs more opportunity to learn about the problems of hospital nursing, and the hospital nurse needs more opportunity to learn about public-health nursing. Operating together in and from a health centre, these two branches, which are so inter-dependent for effective service, will have a fair opportunity to learn how to work together.

It has been suggested above that there are two important conditions which are favourable to effective co-operation between public health and the medical practitioner. The full-time public-health officer should himself have had experience in private practice. The location of the headquarters for public-health service should be placed as close as possible to the natural community headquarters for other types of medical service. That there are many other favourable conditions which might be emphasized is apparent. The reason for selecting these two is that they are in some danger of being overlooked.



## Some Thoughts on Tuberculosis Control in Canada

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**T**O-DAY we have a world of many aspects, depending upon the eyes through which it is seen. To some a given situation is complex, to others it appears simple, and to others it doesn't appear to exist at all.

On the surface, our tuberculosis problem appears to be a simple one. Tuberculosis is caused by a known germ which comes from a host, usually human, and is spread by mouth-to-mouth infection to a new host. Its control should be easy and it would appear that our ideas should be as definite as two and two make four. But such obviously is not the case. Let us just hastily look around and see how well we agree.

There is not the slightest resemblance in legislation throughout the country. Residency regulations differ so that some citizens legally have no residence, yet they still appear to themselves to be living in Canada. Compulsory isolation exists here and not there and where it does exist the methods of application differ.

In case-finding some use 35 mm. film, others 4" X 5", others paper, while others still prefer the large film for all cases. Tuberculin testing is used more widely in some places than in others.

Some use B.C.G. vaccine; others refuse to use it.

We have little agreement on how to build sanatoria or tuberculosis hospitals. Our systems of records are far from uniform. In treatment some believe in long hospitalization, others in short. We don't even seem to agree on who should be hospitalized. In the various provinces our ratio of beds differs vastly and opinion on actual need for beds also differs. Various methods of therapy have their enthusiasts and there are those who temper these enthusiasts. Rehabilitation is a word we are still conjuring with. Opinions with regard to the importance of the role to be played by various types of personnel seem to vary with the force and enthusiasm of the groups of personnel involved.

I trust that these few examples are sufficient to justify my assumption that in dealing with tuberculosis we are working in a field of activity where there is by no means complete unanimity in our approach to what appears on the surface to be a relatively simple public-health problem.

Do we need to make excuses for this state of affairs? Not yet, for I believe

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to date it has been a healthy sign. I would say it shows a widespread interest in a major human problem. Thoughts are daily being expressed by the nurse, the social worker, the teacher, the dietitian, the librarian, the occupational therapist, the private physician, the health officer, the physician engaged directly in tuberculosis work, the laboratory worker, the patient, the patient's relatives or friends, the service club member, the volunteer worker, the nurse's aide, the orderly, the cleaner, the enthusiast, the pessimist, the crank, the quack, newspapers, scientific journals, pseudo-scientific journals, periodicals, politicians in power and politicians in opposition.

Excuses—not yet, but soon, if we who are given the opportunity of having the most intimate knowledge of the problems created by the tubercle bacillus cannot demonstrate a more unified approach to the solution of these problems.

I hope what has been said does not appear to be too critical. It is not meant to be so. These remarks are primarily a challenge to my own thoughts. Improved organization has proved the necessity of better orientation.

In the whole field of tuberculosis work there would appear to be many points that are factual and as such could be reflected in our day-by-day activities by a similarity of action, irrespective of where that action may take place.

Admittedly there are many subjects which are controversial, but these, with carefully planned studies and experiments, should diminish in number.

Now, to specific phases of our subject.

### *B.C.G.*

B.C.G., which was developed in France, has its enthusiasts but is still being used by only relatively few. Are we to adhere to the principle of elimination of infection? If so, why give infection? We usually state that a patient with primary tuberculosis does well and that it is the secondary infection that causes our trouble. Should we then give primary infection even in a measured dose to anyone? Giving infection to study immunity is probably an unorthodox experiment. What knowledge have we of immunological factors in tuberculosis? Let us say it is still a field for much study.

It appears to me that our guiding principle in the control of tuberculosis still should be elimination of infection and that studies should continue in the immunological field, primarily in the laboratory.

### *Treatment*

I believe that we all adhere to the same basic concepts in the treatment of tuberculosis, yet from a practical standpoint the application of treatment shows considerable variation.

The number of beds available in some areas makes it necessary in many instances to select carefully cases for sanatorium care, and the length of hospitalization has varied with the bed ratio. In British Columbia, for instance, our principle has been to make the number of beds fit into the number of cases requiring treatment. Consequently, home services have been markedly extended and all out-patient clinics are very active.

From the public-health standpoint isolation through institutional care is a prime requisite. From the individual standpoint, early and prompt treatment through hospitalization should lead to a greater number of cures.

This is our present view, but mass X-ray surveys have produced findings which should make us take thought of our present methods of treatment. We have noted in our surveys, and I think that the results throughout the country have been fairly uniform, that of all those cases diagnosed as having tuberculosis only about forty per cent appear to require institutional or other care. The other sixty per cent who have had tuberculosis unknown to themselves have lesions which for some reason are arrested or healed. These may be of considerable extent, yet they have healed under normal conditions of life and many of these people have been continuously employed in fairly strenuous forms of work.

Why have these cases healed? How many of the other cases would have healed even if we had not discovered them and asked them to take treatment in our institutions? Is it possible for us to develop methods by which we can better prognosticate the eventual outcome of a tuberculous lesion? Should we continue long periods of bed rest? Why is it that two people with apparently identical lesions who are of the same sex and age group and have opportunities for the same amount of infection respond so differently to the tubercle bacillus?

We see these changes and from time to time they do alter our treatment. For example, in some instances the amount of collapse therapy is increased within institutions, depending somewhat upon the enthusiasm of those administering the treatment. Later there is a drop in the volume of collapse therapy as this enthusiasm becomes tempered by noting the volume of cases that respond well without it.

In the handling of pregnancy with tuberculosis there are still two widely separated schools of thought. One believes that tuberculosis and pregnancy do not go well together and the other believes that pregnancy has no influence on tuberculosis if the tuberculosis is adequately treated.

It would seem that the time has come when we should take stock of our present methods of treatment and should formulate more clear-cut ideas as to the number of beds that are necessary for a given community, the relation of in-patient care to out-patient care, field services and social assistance. Admittedly, any standards drawn up will need to be varied to suit local conditions, but it is submitted that some improvement in present standards of treatment in its broad sense could be undertaken with advantage.

### *Rehabilitation*

Rehabilitation to-day is still in the experimental stage. Do we all have the same conception of what rehabilitation really is? After searching in my own mind for an adequate and simple definition, I would define it as follows: *Rehabilitation is the provision of opportunity to allow the handicapped to obtain by self-effort the necessities for existence and happiness.*

To-day in our institutions throughout Canada we are doing a considerable amount of occupational therapy. As I see it, most of this work is diversional,

although there are some re-training programs through correspondence courses and through the work of teachers and occupational therapists. Other endeavours are also made to put readjusted patients in less arduous occupations than they had previously.

These efforts, worthwhile as they are in the treatment of patients while in hospital and in giving them some opportunities for diversional activities as out-patients, do not reach to the root of the rehabilitation problem.

To obtain the necessities of life and happiness the individual requires work, in return for which he receives wages. This comes back to the old principle of supply and demand of jobs and labour. In times such as these, when labour is scarce and jobs plentiful, almost anyone who is able to do anything can obtain employment. At other times, when labour is plentiful and jobs become scarce, the handicapped are the last persons to receive jobs, ending up as part of the great unemployed.

It is herein submitted that for any rehabilitation plan to be truly practical one of four steps will have to be taken:

1. Pensioning the handicapped. This is the defeatist's plan and assumes that industry cannot support the handicapped worker and, therefore, he becomes a state responsibility.
2. Subsidizing established industries for the employment of a certain percentage of handicapped. Such a plan has some merits and should receive careful study.
3. Establishing state industries in which only handicapped are employed. This is the sheltered workshop plan.
4. Providing legislation by which certain jobs become the prerogative of the handicapped.

Some such definite policy is needed before any successful conclusion can be reached in any rehabilitative effort.

#### *Legislation and Regulations*

An infectious disease, whether it occurs in one end of Canada or the other, should present an identical situation as far as legislation or regulations are concerned. Yet when we look at our present situation throughout Canada our various acts are as different as day and night. The basic act dealing with health in each province is the general public health act and these bear very little similarity among the various provinces. I do not think that there is any doubt that we basically agree on the methods of controlling infectious disease; therefore, it would seem reasonable that the health acts of the various provinces should be identical in character.

Should we have laws for the compulsory isolation of tuberculous patients? With good educational methods, good facilities for treatment and adequate care for dependents, compulsory regulations should rarely be necessary, but it is submitted that they should exist for the occasional case. If it is agreed that they should exist, why are they not in effect throughout the length and breadth of this country?

Our residency and responsibility acts vary. In one province a person gains or loses residence in a six-months' period, whereas in another province it takes twelve months to do the same thing. People are permitted to move freely from one province to another and yet the situation may, and frequently does, arise where a person is living in Canada and yet has no legal residence. Surely such acts should be standardized and when we are dealing with such simple facts standardization should not be an insurmountable task.

The question of free treatment or payment upon ability to pay for treatment should be another simple matter to settle and with agreement it should be possible for all provinces to handle treatment in the same manner.

Reciprocal arrangements between the various provinces relative to cases moving from one province to another have often been discussed. This is a problem that requires careful study and analysis and here again it is submitted that we are not dealing with intangibles but with definite facts that should be readily determinable and that we should be able to reach a sound solution.

It has been suggested that there should be reciprocal payment for the maintenance of patients in the various provinces, the province responsible for the case paying the charges. The problem is not so simple as that, as capital expenditure must be taken into consideration. If, for example, a large number of patients decided that facilities or climate in one province suited them better than another, they could of their own free will move to that province, overburdening the facilities of that province and leaving beds in another province vacant.

Now, regarding social assistance—I believe that we are all agreed that tuberculosis is a family problem and where the breadwinner is affected and requires institutionalization that the family frequently suffer from loss of income and the patient suffers from anxiety. This retards his progress and at times leads to his signing himself out of hospital.

In British Columbia we have lately attempted to face this problem, but our problem in this regard should be no different from the problem existing in the rest of Canada.

We have recently changed the whole basis of social assistance as far as tuberculosis is concerned. Previously a family had to be destitute to obtain such assistance. Now the basis for granting assistance is cessation of income—not destitution. Adequate food allowances are assured to maintain a normal diet for the members of the family. Thrift is sponsored under this new scheme and the first \$250 for single persons and the first \$500 for married persons is not counted in assessing the assistance given. The remaining assets are calculated at 3 per cent and the allowance is reduced by the amount those assets could earn at that interest. Previously rental allowances were given, but this has been deemed to be unfair and to-day actual rent is paid. Where the person has a mortgage and is attempting to own his own home, interest on mortgage payments is assumed. Assistance is also given for life insurance so that this will not be lost. Consideration is given to payments for basic furniture which is being purchased on the installment plan.

Thus, a scheme based somewhat on the new British plan has been put into

effect to try to preserve the family unit and remove anxiety from the patients' minds, allowing them better opportunity to recover from their disease.

Are such regulations sound? If they are, is it impossible to devise means by which they could be uniformly put into effect throughout Canada?

### *Hospital Construction*

Throughout Canada many millions of dollars have been and are being spent on hospital construction. This is being done by Dominion, Provincial and Municipal Governments. It is submitted that the efforts of all three should be correlated in some way. There would appear to be a need for a real hospital-planning program.

How are individual hospitals built to-day? At times the hospital is built to a sum of money. At other times it is built to provide adequate service, irrespective of cost. Frequently a local superintendent and an architect together complete a plan and the hospital itself.

The building of modern hospitals is a speciality in itself and requires constant research and study. New developments in building material, in insulation, heating, sound-proofing, lighting, conveyor systems, etc., should be constantly watched and material made available through some central source for all those contemplating hospital construction.

The needs of hospitals for acute cases and those for chronics may differ considerably.

It is submitted that when we are spending these large sums of money there should be a greater attempt to improve our present hospital construction program by some centralization of research and planning, so that advice and constructive criticism could be given to any hospital-construction program in the Dominion.

### *Records*

There have been some attempts to standardize record systems throughout Canada. However, it is noted that the systems of records in our sanatoria, clinics and district work vary considerably. Admittedly where special studies are being carried out special records for such studies become necessary, but for day-by-day work when we are dealing with exactly the same conditions there should be little reason for variations in the record systems.

### *Trained Personnel*

In operating a tuberculosis program to-day it is found that a great variety of trained personnel is necessary. The part that each has to play has been somewhat determined by the enthusiasm of the various types of personnel, rather than by definite planning as to the necessary qualifications of each group, the number of patients a given worker can handle and the extent of responsibility that each position should have.

We find to-day that we have in tuberculosis work the physician, the registered nurse, the public-health nurse, the X-ray technician, the laboratory worker, the bacteriologist, the generalized social worker, the medical social worker, the

occupational therapist, the teacher, the librarian, the dietitian and the physio-therapist. It is felt that the time has come to review the qualifications necessary for each group and decide whether as many specialized fields are necessary or if there could be greater generalization.

A careful analysis should be made as to the number of each of these types of workers that are likely to be needed so that every attempt will be made to train sufficient numbers to meet future demands. In our province there has been a great expansion in the number of public-health nurses and the number of social workers; also the number of occupational therapists employed has been on the increase.

Is it possible to correlate at least a portion of the courses of some of these people? For example, could the nurse, physiotherapist, occupational therapist and social worker have a similar foundation training, branching off into their particular fields at a determined point in their course?

The physician to-day is trained primarily to be a general practitioner. He does internship work of varying lengths of time and later may go on to specialize in some particular branch of medicine or surgery. All our other workers are also dealing with human beings. Should we have more generalized health and welfare workers and for the few who care to go on to this or that particular branch a higher degree of specialization? There appears to me to be a field here for real study as it is only adequate personnel that can make any program a success.

There are a number of other situations in our tuberculosis work and in our health work generally where it would appear that greater correlation of thought through co-ordinated planning could produce more specific approaches to a given situation and in the end produce improved results.

In our educational programs we are all attempting to do the same thing. Possibly we all reach the same end results by different methods of approach and perhaps from one part of Canada to another different methods of approach may at times be necessary. However, the fundamentals are the same and although there has been great improvement in the last few years through greater centralization of educational efforts—and herein I speak of lay education rather than professional education—it is felt that there could be even greater improvement.

In our hospitals and home services routine techniques could be standardized and there appears to be no reason why our accounting system in all institutions should not be uniform.

The foregoing has been an attempt to show that there are a great many things in our work that are factual and which should be carried out on exactly the same basis in all parts of Canada; further, that there are some phases of our work that require greater correlation in study and planning; that in many instances it is possible for us to be more specific and definite about many things than we are.

In conclusion I would like to recommend a plan as to how this might all be accomplished. I believe that a Dominion Tuberculosis Council should be



formed with representation from every province of Canada and that this council should be financed by the Dominion Government.

It could be charged with the responsibility of:

1. Formulating legislation which would be recommended to the provinces as a standard type of legislation to be applied throughout the Dominion.
2. Standardizing treatment, as far as possible, in the institutions and clinics and recommending routine techniques for institutions and home services.
3. Appointing a committee to study the rehabilitation of the tuberculous in correlation with the general rehabilitation program.
4. Formulating a plan for social assistance which could be uniform throughout all provinces.
5. Studying bed capacity throughout Canada and recommending where and when institutions should be built and appointing a special committee to study hospital planning. In this regard it is suggested that under the new Department of National Health and Welfare at Ottawa there should be a research section on hospital planning so that all new developments in hospital construction could be brought together and made available to all provinces in their hospital-construction programs. The Tuberculosis Council should be represented in some way through such an office.
6. Studying the possibility of greater standardization of records.
7. Recommending and assisting in a planned study of training of personnel and their proper placement in the health services.
8. Establishing and recommending to the provinces a routine system of accounting so that comparative costs could be obtained accurately.
9. Stimulating and supervising research. This could be done by the Dominion Tuberculosis Council being provided with funds by the Dominion Government to make grants for fellowships or special studies in any part of Canada where they appear to be warranted.
10. Reviewing the results of all research and studies and issuing statements as to the relative value of any new developments in the tuberculosis field.
11. It is submitted that the Dominion Government should give grants-in-aid to the various provinces for certain phases of health work and that as far as tuberculosis is concerned these grants-in-aid should be allotted upon recommendation of such a Dominion Tuberculosis Council.

Undoubtedly the formation of such a council is also applicable to other phases of preventive medicine and others undoubtedly should be set up. From such councils there could be elected representatives to a central council, concerned with all phases of health work. This is already in existence in the Dominion Health Council, but it is suggested that this is not sufficient and that a Dominion Tuberculosis Council as suggested is necessary to handle this specialized branch of public-health work and that it is only by this means that planning, co-ordination, standardization and maximum progress can really be accomplished.

# An Outbreak of Typhoid Fever in Alberta Traceable to Infected Cheddar Cheese

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STATISTICAL records of the Department of Health of the Province of Alberta show that between January 1, 1936 and September 30, 1944, 507 cases of typhoid fever occurred in the province, of which 111 were directly traceable to the consumption of infected cheddar cheese. (The population of the province according to the 1941 Dominion Census was 788,393.) During this time the province had three distinct cheese-borne outbreaks—the first in 1936, the second in 1938, and the third in 1944. It is apparent that during the past eight years at least 20 per cent of all typhoid in the province has been directly attributable to infected cheese. This figure would probably have been higher if the source of many of the other cases could have been ascertained. Of the 111 cases, 11 were fatal.

Dominion statistics indicate that cheese production in Canada is carried out chiefly in four provinces—Ontario, Quebec, Manitoba, and Alberta. As these four provinces produce over 98 per cent of the Dominion's cheddar-cheese supply, it is not surprising that practically all recorded cheese-borne outbreaks of typhoid in the Dominion have occurred in these provinces, since "green" unpasteurized cheese is much more readily available to the public in the area in which it is produced than is the case where cheese has to be imported.

In the 1944 outbreak in Alberta, 83 cases of typhoid were reported, with 7 deaths. As is the case with most typhoid outbreaks, a certain number of the cases were of a primary nature, the result of having eaten infected cheese, while the remainder were contacts of the original primary cases. The outbreak was the most wide-spread of its kind yet known in the province, extending over an area in Southern Alberta approximately 300 miles east and west and 100 miles north and south. Eight cases occurred in the town of Macleod, 35 in the city of Medicine Hat, 5 in the city of Calgary, 10 in the area immediately surrounding the hamlet of Rolling Hills, 4 in the hamlet of Rosemary, 3 in the Rockyford district, and the remainder in isolated areas throughout the south of the province. (See figure I.) One case occurred in the Province of Saskatchewan.

## EPIDEMIOLOGICAL INVESTIGATION

During the week of March 20, 1944, a number of cases of typhoid developed in Medicine Hat and a request was made to the Provincial Board of

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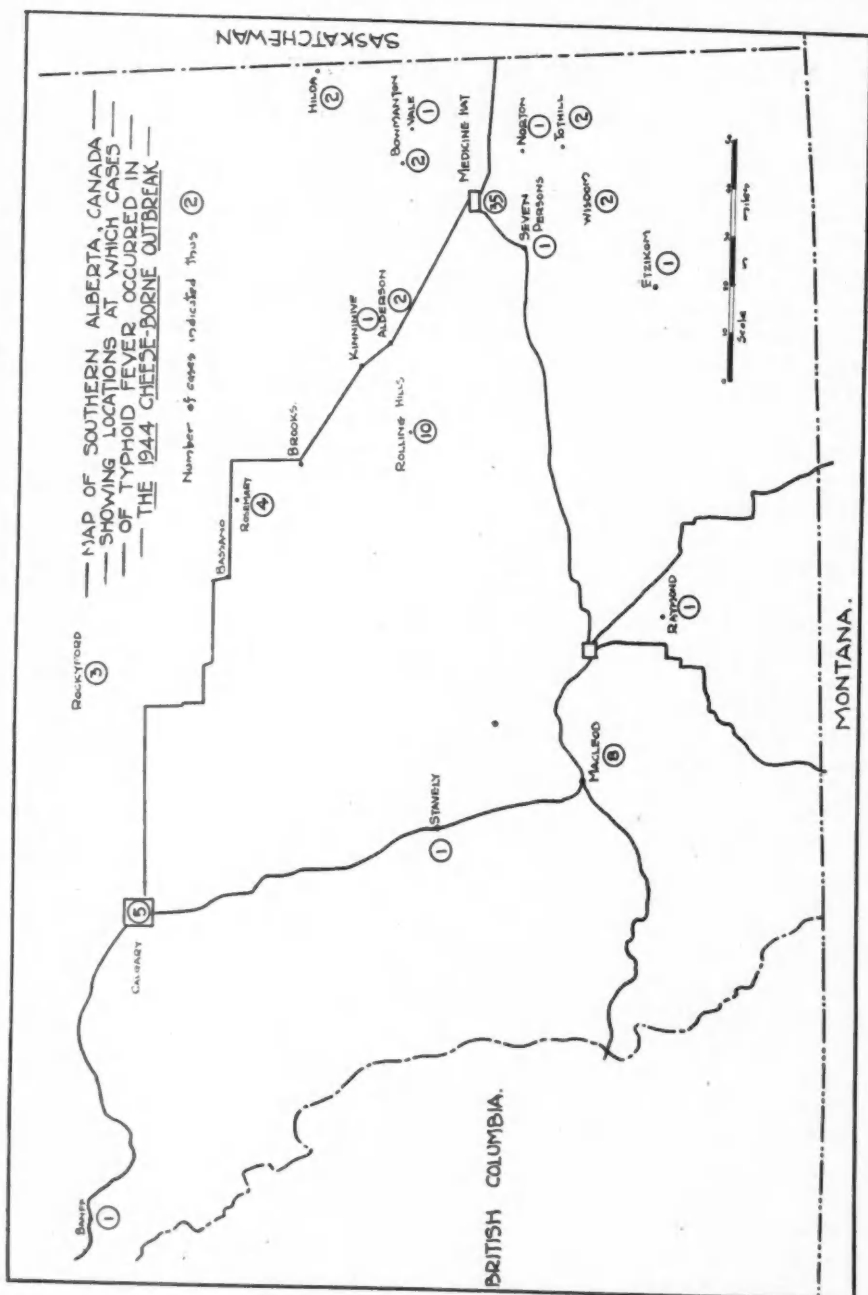


FIGURE 1

Health for assistance in tracing the source of the outbreak. Two officials of the Board were accordingly sent to Medicine Hat on March 23rd.

On arrival, it was learned that the persons sick from the disease were not only from the city itself, but also from farms as far as thirty miles away. It was then decided to visit the homes of the patients to see what information could be obtained. Some of the homes received their milk supplies in a pasteurized form, others in the raw state. Moreover, milk was being obtained from all the different dairies in the city, thus more or less ruling out the possibility of a milk-borne outbreak.

Further questioning revealed that all the sick persons had eaten fresh, green cheddar cheese, which in almost every case had been purchased at the same food market. It was also learned that the wife and six-year-old daughter of the manager of this market were ill with typhoid.

Visits were made to the various farms affected and it was found that here again practically all the patients gave a history of having eaten green cheese purchased in Medicine Hat at the same food market.

The epidemic gave no evidence to indicate that the water supply of the city of Medicine Hat was at fault. The supply is subjected to routine coagulation, filtration, and chlorination. Furthermore, careful orthotolidin-testing records are kept by the water department, which has always followed the practice of having the water tested regularly at the Provincial Laboratory, with excellent results. Moreover, many patients gave no history of having used Medicine Hat water.

Table milk, water and ice having been more or less removed from suspicion, it was decided to investigate further the possibility of a cheese-borne outbreak. It was readily learned that the suspected cheese had been manufactured in a small cheese factory approximately sixty miles northwest of Medicine Hat. From a physician practising in a town located ten miles from the factory, it was learned that four persons there had recently been hospitalized but their sickness had not been fully diagnosed—blood samples had been forwarded to the Provincial Laboratory, but the results of the Widal's had not yet arrived.

With this evidence, it was decided that the executive health officer for the Province should be informed so that he might institute immediate measures to see that no more cheese from the suspected factory would be distributed. This procedure was carried out immediately, thanks in no small measure to Mr. D. H. McCallum, the Dairy Commissioner for the Provincial Department of Agriculture. Thus within two days after the investigation was begun the Provincial Board had taken its first major step in handling the outbreak.

Following the investigation at Medicine Hat, on March 27th a visit was made to the factory in which the suspected cheese was being manufactured. The factory itself was found to be relatively small, manufacturing approximately 600 pounds of cheese daily. The factory officials seemed to be suspicious that the water supply was possibly the cause of the trouble. The factory is located in an area of Alberta which is served by a large Irrigation Scheme upon which practically all the residents of the district are dependent

for their drinking water. In the late fall sufficient water has to be impounded in surface-storage reservoirs to serve the users through the winter months. Thus a large surface water reservoir had been provided for the cheese factory, the water of which was supposedly chlorinated before its use in the factory.

Inquiry around the factory revealed that the head cheesemaker lived immediately adjacent to the factory and that he and his family had been using water from the cheese-factory reservoir all winter with no ill effects, thus to some extent removing suspicion from the water supply. As a routine procedure, arrangements were made with the local doctor to obtain stools from the cheesemaker and his wife, and also from the assistant cheesemaker, for testing at the Provincial Laboratory. These tests all proved negative for *B. typhosus*.

Questioning of the officials at the cheese factory revealed that the milk brought into the factory from nearby farms was processed during the same day and was then moved to the curing room, pending the grading of the cheese by Dominion Government officials at Calgary. A period of approximately two weeks usually elapsed between the date of manufacture and the obtaining of the grade, following receipt of which the cheese was marketed. Invariably the cheese moved directly from the factory to the retailer. All cheese produced in the factory was of the cheddar type. Neither the milk from which the cheese was manufactured nor the cheese itself during the processing was pasteurized.

A careful perusal of the shipping records at the factory revealed the fact that the batch of cheese manufactured on February 4, 1944, was released to the retail trade as follows: 30 pounds to the graders at Calgary on February 16th; 178 pounds to the food market at Medicine Hat on February 17th; 91 pounds to Banff on February 19th; 178 pounds to Rockyford on February 19th; and 86 pounds to Macleod on February 19th. The 30 pounds shipped to the graders at Calgary was part of a larger shipment of 627 pounds made to that city, and as soon as a small sample had been removed from the 30-pound "triplet" for grading purposes, the remainder was released to the retail trade.

Since the whole batch of cheese was under suspicion, telegrams were immediately sent to medical officers of health of the municipalities concerned, warning them to be on the lookout for typhoid cases. As a result, word soon reached the Provincial Board of Health that 5 cases had been diagnosed in Calgary, the dates of onset occurring between March 14th and March 27th; one case had been diagnosed at Banff, the date of onset being March 20th; 3 cases had been diagnosed in the farming community surrounding Rockyford, the date of onset being March 19th; and 8 cases had been diagnosed in Macleod, the dates of onset varying from March 5th to 24th. With only two exceptions, these cases gave a history of having eaten the cheese from the suspected factory. Simultaneously, as a result of the publicity given the outbreak, more cases began to be reported from other areas in the province, with by far the largest number from a farming community known as Rolling Hills, where seven cases developed. All gave histories of having eaten the

green cheddar cheese from the suspected factory and the date of onset of the disease ranged from March 17th to March 25th. Additional checking of the factory shipping records showed that between March 2nd and March 4th considerable cheese was shipped to Medicine Hat and that during this time some cheese was shipped to the Rolling Hills area, some to a district immediately west of the town of Stavely, and some was sold locally at the cheese factory. Cases of typhoid developed in all these areas. Thus it is apparent that there were at least two separate occasions upon which contaminated cheese was manufactured—around February 4th and around February 18th.

As a result of these conclusions it was decided to have all the cheese that had been shipped from the factory from February 1 to March 27, 1944, traced and seized. This work was carried out primarily by the Royal Canadian Mounted Police, with some assistance from local health departments, and was rapidly completed. The persons entrusted with the problem are to be commended on their good work. In all, approximately 6 tons of suspected cheese were taken off the open market and on October 15, 1944, were still being held, pending a decision as to final disposal.

#### LABORATORY FINDINGS

On March 24th the Provincial Board of Health was successful in obtaining, from two homes in which typhoid developed, two samples of cheese which had been manufactured on February 7th. These samples were then approximately forty-eight days old, but nevertheless were submitted to the Provincial Laboratory to see if typhoid organisms could be isolated. No success was attained in this endeavour, nor was the Laboratory of Hygiene of the Department of Pensions and National Health any more successful with tests on a portion of the same cheese samples. It should be pointed out that the samples were very small and were somewhat dried out.

On April 8th two "triplets" of 30 pounds of cheese each which formed part of the batch of cheese processed on February 4th were located. Similar tests by the same laboratories showed no indication of *B. typhosus*. These triplets were obviously about 63 days old when obtained but were in their original shipping form, never having been cut, nor the wax coating enclosing them having been broken.

Early in April, the Provincial Board of Health despatched one of its public health nurses, Mrs. Norah Southworth, to the district in which the cheese factory is located to make a survey of the shippers to the factory. In this way it was learned that milk was being shipped by 96 different families, 223 members of which gave histories of handling milk in one way or another. Of these 223 persons, 19 gave histories of previously having had typhoid, 51 gave histories of contact with typhoid, and 82 gave histories of remote contact. The remaining 81, many of whom were adolescents born in the district, gave histories which more or less ruled out much possibility of their being the agent responsible for the outbreak. Three samples of stool, obtained on different days, and one urine sample were obtained from each member of the

two first-mentioned groups. Single samples of stool and urine were obtained from the third group. No testing was done on the remaining 81 persons. As a result of this procedure, one carrier was detected among the first group giving a history of having previously had typhoid. This 38-year-old woman had had the disease in Russia in 1919. All three of her stool samples were positive. All other samples obtained from the other 141 persons proved negative. Mrs. Southworth is to be congratulated on her work, particularly when one takes into consideration the distances involved and the poor roads encountered during the spring of the year.

In passing, it is of interest to point out that the procedure outlined above of looking for a carrier is identical with that followed in 1938 in another part of the province when another carrier was also isolated. The Department of Health of the Province of Alberta has been particularly fortunate in its detection of typhoid carriers, in that stools obtained from suspects giving a past history of typhoid have invariably been found positive on the first test.

During the period of the epidemic 122 blood specimens were submitted to the Provincial Laboratory for agglutination tests for typhoid and other related infections. Not only were these tests carried out on the sera from these blood specimens, but a culture was also made on the clot of each sample submitted. Fifteen of these cultures yielded *B. typhosus*. On the basis of these results, Dr. R. M. Shaw, who was in charge of all testing, stresses the fact that the importance of the blood culture for the early diagnosis of typhoid is frequently overlooked by the physician.

An interesting quotation from Dr. Shaw's report is as follows:

"During the first week or ten days of the disease, a bacteraemia is present. There is statistical evidence to indicate that if blood cultures are made during this period, 90 per cent of the cases yield cultures of the infecting organism. A laboratory diagnosis can thus be made rapidly, at an earlier date, and more surely than by any other means. The Widal does not become positive until the end of the first, or beginning of the second week, or later, and even then may be so weak as not to be significant. Then, too, so far as the Widal is concerned, the presence of many persons vaccinated against typhoid and paratyphoid fevers confuses the issue unless repeated tests are made."

Dr. Shaw also found that of the fifteen bloods diagnosed by the growth of *B. typhosus* from the clot, eight failed to show a positive Widal at the time. Furthermore, he points out that the remaining seven positive Widals could be used for diagnosis only if one were familiar with the clinical history.

During the period of the epidemic 694 specimens of stool and urine were tested at the Provincial Laboratory, 250 of which were obtained from patients and suspects, in the course of diagnosis and discharge, and the remaining 444 from persons belonging to families shipping milk to the cheese factory. These tests showed that two men had become urinary "carriers", at least temporarily. One of these was still excreting *B. typhosus* in the urine as late as August 31, 1944.



As a follow-up to his work, Dr. Shaw forwarded 9 cultures of *B. typhosus* which had been cultured in his laboratory during the period of the epidemic to Dr. C. E. Dolman, Director of the Division of Laboratories of the Provincial Board of Health, British Columbia, to be phage-typed according to the methods suggested by Dr. James Craigie (1) of the Connaught Laboratories. Six of the cultures were obtained from bloods or stools of persons known to have contracted typhoid from eating contaminated cheese; two of the cultures were obtained from the stool of the detected "carrier"; and the remaining culture was obtained from a sporadic case of typhoid which developed in the southern part of the province, but which had never been associated with the cheese-borne outbreak by Provincial Board of Health officials. Dr. Shaw did not know this to be the case at the time he submitted the last-mentioned culture. As a result of his work, Dr. Dolman reported that 8 of the 9 cultures typed "E" whereas the remaining culture typed "A". The type "A" culture was found to be that of the sporadic case above noted. Thus it is apparent that the detected "carrier" and all the cases attributable to the eating of infected cheese were of the same group.

Dr. Shaw has the following comments to offer on the tests he made on the cheese samples submitted to him as previously mentioned:

"All specimens were immediately examined on receipt. In each case cultures were made on three different solid selective media and on one liquid medium from which sub-cultures were again prepared subsequently. No *B. typhosus* or related pathogens were found on any cultures. Several pieces yielded colonies of *B. coli*. One uncut 30-pound cheese and other portions were sent to the Laboratory of Hygiene, Ottawa. The reports therefrom, after a very exhaustive study, were similar to our own; viz., negative for *B. typhosus* and other related pathogens."

As was the case in previous Alberta outbreaks, the typhoid organism was not isolated from any of the cheese concerned. As previously stated, the cheese so tested was 48 and 63 days old. In view of the work of Campbell and Gibbard (2) on the survival of *E. typhosa* in cheese, it was hoped that the actual organism would be isolated, but such was not the case. Why the typhoid organism should survive for periods as long as 336 days in the case of artificially inoculated cheese and be absent in ordinary infected cheese 63 days old is an open question, particularly in view of Campbell and Gibbard's finding that "there appears to be no difference in the longevity of the infecting organisms when small or large inocula are used."

Statistical records indicate that the period of incubation of the disease was from 14 to 21 days, as was the case in previous Alberta outbreaks. There was also evidence to show that the typhoid organism was still alive for approximately one month after date of manufacture, but nothing to indicate that any cases were contracted by eating infected cheese of greater age.

#### CONTROL MEASURES

In view of its experience with cheese-borne typhoid, the Provincial Board

of Health was instrumental in having regulations put into effect which, after December 1, 1944, will prohibit the sale of cheese in Alberta unless it either has been cured for at least three months or else has been properly pasteurized. The passing of such regulations under Provincial authority brings up a number of problems essentially having to do with the importation of cheese from outside the province, and because of these the Provincial Board of Health has always felt that this problem could be dealt with to better advantage under Dominion legislation. As no action could immediately be obtained along these lines it was deemed necessary to handle the matter from a provincial stand-point and the aforementioned regulations were passed.

#### CONCLUSIONS

(1) Although *B. typhosus* was not isolated from any of the suspected cheese, circumstantial evidence was such as to indicate the source of the epidemic, namely, infected "green" cheddar cheese.

(2) Actual cases of typhoid developed from eating cheese that was one month old, but prompt action on the part of the Provincial Board of Health removed all suspected cheese from the market before further cases had a chance to develop.

(3) Phage typing afforded an additional means of assuring the Provincial Board of Health that the organism isolated from the carrier, viz. Type "E", was the same type as that found in 6 of the cases chosen at random.

(4) The problem was such in the opinion of the Provincial Board of Health that some legislation was necessary to prevent further outbreaks. As a result of this decision, regulations respecting the sale of cheese in the Province of Alberta will go into effect on December 1, 1944. These regulations will require that cheese either be pasteurized or be stored for at least 3 months following manufacture before being allowed to appear on the open market.

(5) The problem is not by any means confined to Alberta alone, and from an administrative standpoint, Dominion rather than Provincial legislation would appear to be the more logical method of preventing further outbreaks.

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# Canadian Vital Statistics During the War Years\*

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COMING on the heels of a pronounced economic depression, the first effects of the war on Canadian vital statistics have been mainly those associated with a period of temporary prosperity. Unemployment has been at a minimum, the national income higher than ever before, and, as the recent report of the Combined Food Board shows, supplies of all food requirements have been greater than in the pre-war period. The effect of all these events is immediate and usually clearly discernible. While Canada has been spared the worst ravages of war, yet the presence of a considerable army overseas, the resulting casualties, and the suffering caused, have to be set on the other side of the ledger. Unfavourable effects of the war can easily be seen in occupied countries. In Canada they are less easily discernible and it is probable that their effect on vital rates will not be fully felt for some considerable time.

## MARRIAGES

The effect of the war on marriage rates has been conspicuous, partly because no very consistent secular trend can be discerned, and partly because they are immediately sensitive to changes in employment opportunities. Fig. 1† shows the course of the crude marriage rate from 1926 to 1942. Marriages began to drop sharply in 1930 and were at their lowest point in 1932-33. By 1937 they had regained their former level but there still remained a back log of postponed marriages. The war years saw the crude marriage rate rise to a peak of 10.9 in 1942. In the last six months of 1942 there were 69,620 marriages as against 71,011 in the corresponding period of 1941. Preliminary returns for 1943 give a marriage rate of 9.4. For 1944 the data are incomplete but registrations filed with the Vital Statistics Branch for cities and towns with populations of 10,000 and over in the first five months of 1944 amounted to 18,059 as compared with 21,703 in the corresponding period of 1943.

Crude marriage rates do not distinguish between first and later marriages and are influenced by changes in the age and sex composition of the population. More refined rates are available only for Census and adjoining years, and are expressed in the form of a nuptiality table. In 1930-32 the net nuptiality rate was 0.82. This means that out of every 100 girls 15 years old, 82 would live to be married at least once according to the marriage and death rates of that period. The rate was low for Canada and already showed the effect of postponement of marriages. In contrast, the same rate for the years 1940-42 was 0.95. Clearly marriage rates such as these latter could not

\*Presented at a conference of the Vital Statistics Section, Canadian Public Health Association, held in the Chateau Laurier, Ottawa, on September 25, 1944.

†The charts were prepared by Mr. J. W. Delisle of the Dominion Bureau of Statistics.

continue for any length of time, as it is unlikely that 95 per cent of all girls will eventually marry. The true mean age at first marriage, which in 1930-32 was 25.3 years (net), in 1940-42 was 23.8 years.

Perhaps the least ambiguous data about conjugal condition are found, though only at ten-year intervals, in the proportions married by age-groups at a Census. Confining our attention to women 15-19 years, 20-24 years and 25-34 years, we find that among women 15-19 years the Census of 1911 showed the greatest proportion married. The two later age-groups showed maximum proportions married in 1921. In 1931 there were low proportions married in all the younger age-groups. Evidently the period of greatest frequency of marriage for women was just prior to the last war. This was followed by a fairly continuous decline and low marriage rates prevailed until the late thirties. In the Census of 1941 there were slightly more married women under 25 years of age than in 1931, but the proportions were still below the 1921 level. The proportion married between 25 and 34 years of age was less than in 1931. By June, 1941, the effects of the extremely low marriage rates of 1931-36 on younger women had been wiped out but marriage was still at a low post-war level.

The crude marriage rate continued to rise up to about the middle of 1942. A rough estimate of the proportions married at June 1942 suggests that by then about as many women between 15 and 24 were married as in the peak years of 1911 and 1921. There was only a slight rise in the proportion married between 25 and 34. Probably the war came too late to affect the marriage prospects of women now over 30. It seems that by 1942 the maximum amount of marriage attainable under existing conditions had been reached, and that the recession in 1943 was a result of the elimination of the surplus of unmarried. This conclusion is tentative, since, even when it is most fashionable, marriage is still postponed in the majority of cases till long after biological maturity. At the present time, while conditions are still favourable to early marriage, many young men are overseas. Their absence may accentuate the decline in the marriage rate due to the disappearance of surplus unmarried, but a recovery should occur after demobilization, as after the last war. Continuing the trend of previous years, the number of divorces per 100,000 population rose steeply in 1942.

#### BIRTHS

In spite of the spread of family limitation, most marriages are followed by a first birth fairly soon, and many of these first births by a second. Hence fluctuations in the birth rate follow changes in the marriage rate at an interval of about one year. The correspondence tends to become ever closer on account of the much higher proportion which first and second births form of all births in recent years. The Canada Year Book for 1942 gives a chart which shows the close correspondence between the amount of unemployment, marriages, and births in Canada during the depression years. The chart also shows how the fluctuations in births are superimposed on a continuous and

marked downward trend. Fig. 1 shows the crude birth rate up to 1942 in relation to the marriage rate. The birth rate curve is shifted back one year to show the correspondence. As a result of the downward trend mentioned, the first effect of the rising marriage rate was to arrest the decline in births. A marked rise in the latter was not seen until 1940. The peak was reached towards the end of 1943. The preliminary rate for that year is 24.0 but the rate for the last quarter was lower than for the same period in 1942. Returns are incomplete beyond this point, but examination of available registrations suggests that the turning point in births came towards the end of 1943, corresponding to the turning point in marriages in 1942. There has been no marked change in the proportion of the illegitimate births during the war years.

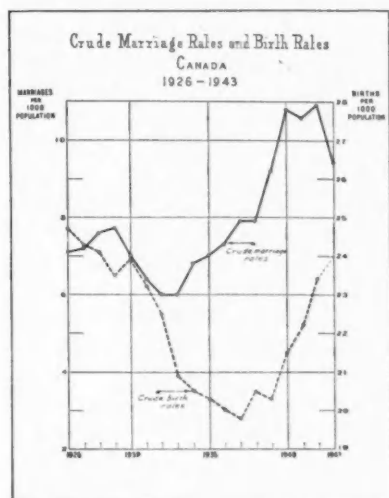


FIG. 1

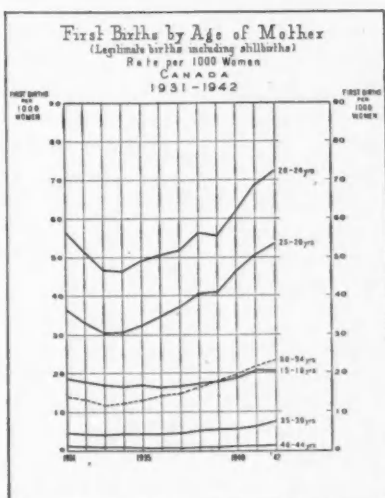


FIG. 2

The gross reproduction rate, though unaffected by changes in age and sex composition, is as much affected as the crude birth rate by violent fluctuations in marriages and subsequent births. In the last few years it has followed the same course as the crude birth rate. The correspondence between marriages and subsequent births is best seen in reproduction rates by order of birth. Order of birth for a series of years is only available in Canada for legitimate births including stillbirths, but these figures are perhaps sufficient to illustrate the trend. Figs. 2, 3 and 4 show the rates at which first, fourth and tenth births have occurred to women of specific ages. We see that first births follow marriages fairly closely with a lag of about one year, and that the rise has been very marked. The effect of rising marriage rates is still visible in fourth births after a longer interval, but is here seen as an arrest of the downward trend rather than an actual rise. No effect at all is seen in tenth births. The different orders of birth form a continuous series, of which the ones charted are illustrative.

We can see more clearly what is happening in countries where the duration of marriage is recorded at the registration of births. In New Zealand, where the war-time increase in births has been spectacular, there were a large number of births postponed during the depression. The war-time rise was mainly in first and second births. Rises in births of these orders were greatest in marriages of three or more years' duration. Up to the end of 1941, the net result in total numbers of children born was to wipe out the effects of the worst years of the depression, and current fertility was probably about equal to what it was in 1932. As in Canada, an arrest of the downward trend was seen up to fourth births, but higher orders of births resulting from recent

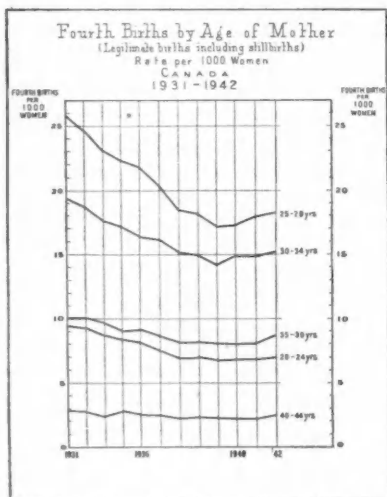


FIG. 3

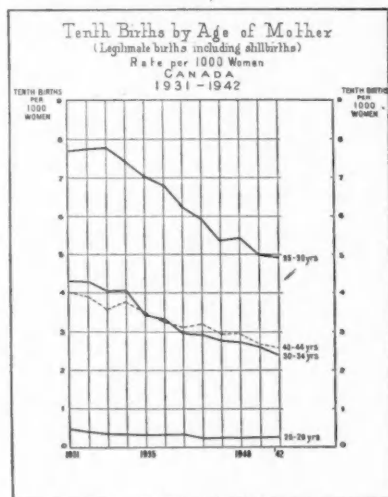


FIG. 4

marriages have continued to decrease. While the duration of marriage in relation to births is not known in Canada, a rather imaginary estimate has been made of the relation of births to the marriages that produced them. This suggests that in general marriages have resulted in continuously fewer and fewer births with a slight superimposed fall and compensatory rise in the last few years.

The charts of order of birth in relation to age corroborate the suggestion that births are now taking place which were postponed during the depression. We see that, for each order of birth, more are occurring to older women. For example, the curve of first births to women of 30-35 crosses that for women 15-19. An ominous feature of the New Zealand situation appears to be that there has been only a negligible rise in the rate at which children are born during the first year of marriage. This remains at a much lower level than in any year before 1939.

We can sum up what we know about current trends in fertility as follows:

(i) The greater part of the war-time rise in births is the result of increasing numbers of marriages. (ii) Probably women are now having first children and, to a rapidly lessening degree, second, third and fourth children, who would have had them earlier if conditions had been more favourable. (iii) It is perhaps also true that the total numbers of families of one, two, and three children now being born are fairly stable, though at a lower level of reproductive capacity than before the last war. (iv) There is no evidence of any change in the continuous reduction in the numbers of large families. This is especially relevant to the Canadian situation where there still is a fair proportion of very large families.

We cannot ignore the fact that there does seem to be a war-time change in public opinion as it affects reproduction. Channels of ostentatious expenditure are curtailed, there is some tendency to greater equality of income, some people are removed from the competitive struggle, and perhaps more have their thoughts somewhat diverted to communal objectives. This may explain why, even apart from the immediate effects of a job and cash in hand, people are more inclined to marry young and have a baby, even at a time when the distant future is more obviously insecure than ever before. A recent Census study on the relation of age at marriage to size of family indicates that while the decline in fertility has affected women marrying at all ages, there is some reason to think that women marrying young are more resistant to influences favouring the very small family. So the young war-time marriages make fairly large families possible even if not probable, and may tend to stabilize reproduction rates.

When we have taken the most optimistic view possible of current trends, there still remains the question of the number of families of four or more children. A sufficient number of these, possibly about a quarter of all marriages, are necessary if the population is not ultimately to decline. Obviously it is impossible to know surely whether or not the young women who have married and produced a baby in the last two or three years are going to go on and have larger families in sufficient quantity. All we can say is that there is at present no reason to believe that larger families will not continue to disappear fairly rapidly. Changes are taking place in the Canadian economy in war-time which have not yet made themselves felt in fertility statistics. The chief of these is the greatly intensified movement into the cities. Recent estimates of the Social Analysis Branch show that this has been much greater during the war years than at any previous time. It is of course possible that recent new-comers to our cities may return to the farm, but if, as seems much more probable, we continue on the path of rapid industrialization and more urban ways of living, the small family is likely to become more and more fashionable. Continued prosperity might avert any immediate catastrophic decline in births but can in the end only entrench the small family still more firmly.

#### MORTALITY

##### (a) *General*

While the effect of the war on marriages and births is easily seen, though



difficult to interpret, it is less easy to demonstrate any specific effect of the war on civilian mortality. Fig. 5 shows the course of the standardized death rate from 1926 to 1942. Mortality as measured by this index appeared to be stationary during the worst years of the depression. It began to improve again in 1938. Nineteen hundred and forty-one was a bad year for epidemics and saw a rise in both the crude and the standardized death rate. The preliminary crude death rate for 1943 was 10.0 as compared with 9.7 in 1942.

A good index of the level of mortality in a community is afforded by the mean expectation of life at birth derived from the life table. In the years 1930-32 this was, for all Canada: males, 60.00; females, 62.10. In 1940-42,

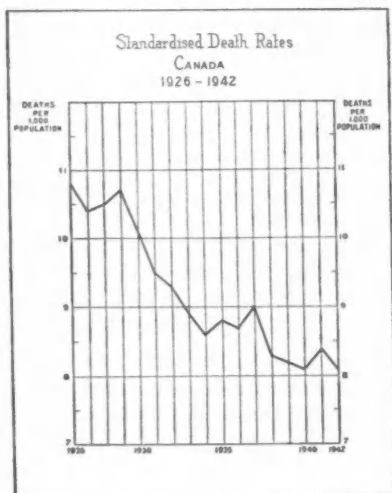


FIG. 5

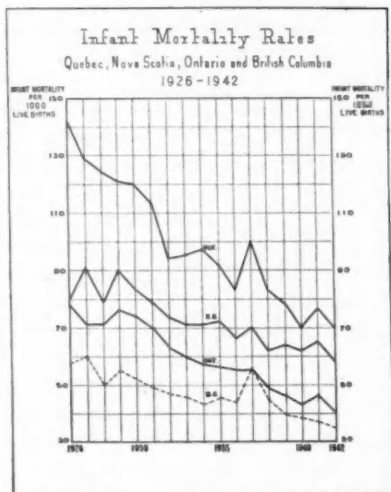


FIG. 6

it was: males, 62.95; females, 66.29. The improvement in ten years has been considerable, particularly among females. Since Quebec was not included in the registration area in 1921, comparable figures are not available for the previous decade. The reduction in age-specific death rates between 1930-32 and 1940-42 corresponds pretty closely to European experience at the same level of mortality. Improvement was greater than expectation at very young ages and for women in the child-bearing period. It was less for adult males and at older ages.

#### (b) Infant Mortality

The course of infant mortality up to 1942 is shown in Figs. 6 and 7. Apart from the set-back in 1937, the rate of improvement has been rapid, but there has not been much progress during the war years. The preliminary rate for 1943 was the same as 1942. The leading cause of death among children under 1 year in Canada is prematurity. The downward trend since 1931 continued

strongly through 1941 and 1942, but rose in 1943. The second most important cause of death is pneumonia. There has been very little improvement in the pneumonia death rate of infants during the last ten years nor did the war years see any marked change. Diarrhoea and enteritis are diseases of infancy especially susceptible to social control and the reduction in deaths from this cause since 1931 has been marked though irregular. The fall from the bad year 1937 to 1940 was rapid. Nineteen hundred and forty-one and 1942 saw a recession though the rates for these years were still below the level of 1939. There was a further fall in 1943. Recent surveys have demonstrated that the death rate from congenital debility is greatly affected by the nutrition

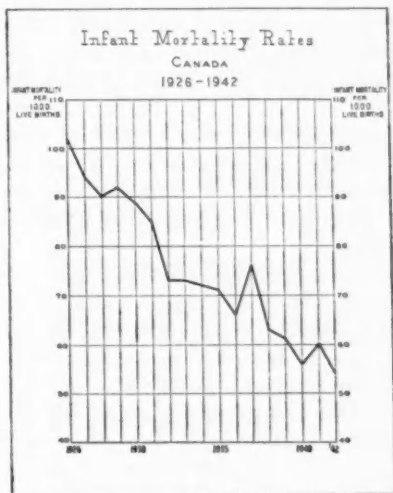


FIG. 7

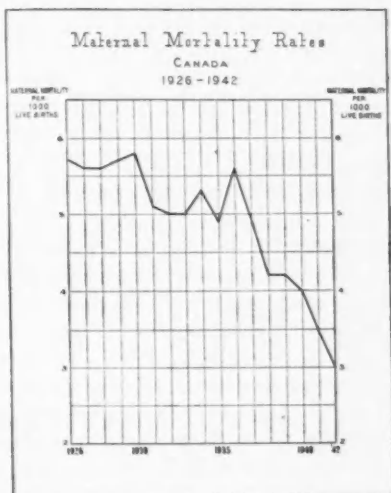


FIG. 8

of the mother during pregnancy. Improvements in this rate shown in earlier years continued during the war years. The rate for 1942 was well below any previously recorded. The improvement appears to have continued in 1943. It is significant that two of the causes of infant deaths which are much affected by the state of health of the mother during pregnancy show the most favourable record during the war years. They seem to reflect improvements in nutrition. For other causes of death, where the causation is more complex, the picture is less favourable. In spite of the fact that high infant mortality rates are in large part a result of poverty, there is a tendency for infant deaths to increase in prosperous times. Thomas suggests that increased employment among mothers may be an explanation.\*

Fig. 7 shows the rapid rate at which the gap between health conditions in Quebec and in the rest of Canada is being reduced. Unfortunately the Maritime Provinces, on the other hand, do not seem to have shared to the same extent in national progress.

\*Thomas, Dorothy Swaine: *Social Aspects of the Business Cycle*. New York: Knopf, 1928.

(c) *Maternal Mortality*

Fig. 8 shows the change in maternal mortality. The improvement in recent years has been striking, and was particularly rapid during the war years. The preliminary figure for 1943 was 2.7 deaths per 1,000 live births. The record of progress has been especially gratifying since the greatly increased numbers of births among a highly mobile population might have been expected to put a severe strain on hospital and medical facilities. In the three years preceding the war the reduction in maternal mortality was 25 per cent. In the first three war years it was 30 per cent.

It is evident from the record that a new phase in the history of maternal mortality was inaugurated in 1937. For many years previously the maternal death rate had shown little sign of improvement in Canada, as in many other countries. But in the seven years between 1936 and 1943 it was halved. A similar change took place elsewhere and it is generally believed that the introduction of the sulfa drugs played a major role in this striking change. However, Dr. Ernest Couture, writing in the *Canadian Journal of Public Health*, points out that the improvement has been greatest in the death rate from toxæmias and considers that improved nutrition has been an important factor in reducing the maternal mortality rate. He also attaches some importance to recent educational campaigns.

We shall look forward to a more detailed analysis of changes in the maternal death rate from the Vital Statistics Branch. For the present a superficial glance at the demographic aspects of the situation makes the reduction in maternal deaths appear even more remarkable. Maternal death risks vary greatly with age of mother and order of birth of child. In Canada we have maternal death rates by age of mother and we find as elsewhere that death rates are lowest for mothers between 20 and 30 years of age. In recent years the proportion of births to mothers of these ages has been increasing and so has tended to lower the total death rate. But we also find that the fall in the rate among mothers 20-24 years from 1936-42 was greater than in the total death rate. It fell by 56.6 per cent during these years. The fall was also great among mothers 25-34 years but less among very young and older mothers. Death rates by age for other than Census years are subject to a considerable margin of error, due to possible errors in estimates of the population by age, but it seems clear that a more favourable age distribution of mothers can have played only a very minor role in the recent fall.

We do not have maternal death rates by order of birth in Canada but they probably vary in the same way as elsewhere. According to New South Wales experience, death rates for primiparæ by age were about twice those of multiparæ. For mothers of all ages, the death rate dropped sharply from the first to the second birth, then rose gradually. The level of the first-birth death rate was not reached again until after the tenth birth. Among older women in Canada a rise in the proportion of first births has been compensated for by a reduction in the numbers of very high orders of births, so that changes in order of births have not had much effect on the maternal death rate. But in the age-group 20-24 years the proportion of first births to all

births increased from 1936 to 1942, the proportion of second and third births decreased, while the numbers of fourth and later births were too small for changes to be significant. If then mortality by order of birth follows the same course in Canada as elsewhere, maternal mortality among younger mothers fell in recent years in spite of an increasing risk of death associated with greater numbers of first confinements.

(d) *Stillbirths*

The stillbirth rate has also been on the decline since 1929. Table I gives rates up to 1942.

| TABLE I                            |      |
|------------------------------------|------|
| RATE PER 1,000 LIVE BIRTHS, CANADA |      |
| Average 1926-30.....               | 31.5 |
| " 1931-35.....                     | 30.3 |
| " 1936-40.....                     | 28.0 |
| " 1941.....                        | 27.0 |
| " 1942.....                        | 26.2 |
| " 1943.....                        | 24.0 |

Unlike maternal mortality, the stillbirth rate is low for first births so that the current situation is in all ways favourable to a decline.

(e) *Mortality from Ten Leading Causes of Death*

Table II shows for the ten leading causes of death (i) the rating for each year, (ii) the crude death rate per 100,000 population, from 1933 to 1942.

TABLE II  
TEN LEADING CAUSES OF DEATH IN CANADA,\* 1933-42

| Year | Diseases of the Heart | Cancer (all forms) | Accidental or Violent Deaths | Nephritis | Diseases of the Arteries |
|------|-----------------------|--------------------|------------------------------|-----------|--------------------------|
| 1933 | 1 145.2               | 2 99.9             | 7 58.3                       | 8 51.7    | 4 65.2                   |
| 1934 | 1 151.3               | 2 97.9             | 6 59.8                       | 8 52.2    | 3 68.3                   |
| 1935 | 1 147.1               | 2 102.2            | 5 63.2                       | 8 56.6    | 3 76.0                   |
| 1936 | 1 149.1               | 2 106.2            | 4 67.8                       | 8 58.1    | 3 82.7                   |
| 1937 | 1 151.6               | 2 107.7            | 5 66.3                       | 8 58.8    | 3 86.5                   |
| 1938 | 1 155.2               | 2 107.5            | 5 64.4                       | 7 58.0    | 3 89.1                   |
| 1939 | 1 164.3               | 2 109.7            | 4 63.5                       | 6 57.9    | 3 96.3                   |
| 1940 | 1 178.3               | 2 117.2            | 4 65.2                       | 5 60.1    | 3 103.3                  |
| 1941 | 1 231.5               | 2 116.8            | 3 73.5                       | 4 64.4    | 5 58.6                   |
| 1942 | 1 236.4               | 2 117.2            | 3 69.8                       | 4 62.1    | 5 56.0                   |

| Year | Diseases peculiar to the first year of life | Tuberculosis (all forms) | Pneumonia (all forms) | Intracranial lesions of vascular origin | Influenza (all forms) |
|------|---|--------------------------|-----------------------|---|-----------------------|
| 1933 | 3 68.8                                      | 5 65.1                   | 6 60.8                | 10 30.0                                 | 9 37.7                |
| 1934 | 4 64.2                                      | 7 59.5                   | 5 60.4                | 9 28.9                                  | 10 18.5               |
| 1935 | 6 63.0                                      | 7 60.4                   | 4 67.9                | 10 23.1                                 | 9 31.1                |
| 1936 | 7 60.0                                      | 6 61.4                   | 5 66.4                | 10 20.4                                 | 9 28.3                |
| 1937 | 7 59.8                                      | 6 60.0                   | 4 69.6                | 10 18.1                                 | 9 47.4                |
| 1938 | 6 58.9                                      | 8 54.7                   | 4 66.4                | 10 13.0                                 | 9 21.1                |
| 1939 | 7 54.6                                      | 8 52.9                   | 5 58.4                | 10 13.2                                 | 9 35.0                |
| 1940 | 6 55.6                                      | 8 50.9                   | 7 53.9                | 10 20.2                                 | 9 24.5                |
| 1941 | 6 54.4                                      | 7 52.8                   | 8 51.8                | 9 39.7                                  | 10 21.0               |
| 1942 | 6 51.7                                      | 7 51.5                   | 8 49.6                | 9 38.4                                  | 10 10.5               |

\*Exclusive of Yukon and the North West. Figures for 1942 are preliminary. Changes in the classification of causes of death affect the figures for Tuberculosis, Diseases of the Heart, Diseases peculiar to the first year of life. Table abbreviated from "State of Health of the People of Canada in 1942" by Heagerty and Marshall.

A gradual increase in the crude death rate from cardio-vascular and renal diseases and from cancer is to be expected in view of the gradual aging of the population. The sudden increases and decreases shown in the death rate from cardio-vascular causes are due to changes in classification. The decrease in the pneumonia death rate appears to indicate the beneficial effects of the new methods of treatment. Accidental deaths in 1941 and 1942 were higher than the average for the previous five years. In 1940 and 1941 automobile accidents were numerous but in 1940 and 1942, as a result of the gasoline and rubber shortages, the death rate from this cause was below the average for 1936-40. As is frequently the case in war-time, the number of suicides declined continuously during the war years. The remaining leading causes of death are dealt with in the next section.

(f) *Mortality and Morbidity from Communicable Diseases\**

In Canada all communicable diseases of any importance are reportable. As in other countries, complete accuracy has been found impossible to attain. It is believed that the standard of completeness in reporting has shown continuous improvement and this is in part responsible for the increase in the number of cases of communicable diseases reported. Table III shows for the principal communicable diseases together, the number of cases, the number of deaths, the fatality case rate, and the death rate per 100,000 population.

TABLE III  
PRINCIPAL COMMUNICABLE DISEASES  
Cases, Deaths, Deaths per 100 cases, and Deaths per 100,000 Population

| Year      | Cases   | Deaths | Deaths per 100 cases | Death Rate per 100,000 population |
|-----------|---------|--------|----------------------|-----------------------------------|
| 1939..... | 146,709 | 18,312 | 12.5                 | 160.0                             |
| 1940..... | 161,574 | 16,455 | 10.2                 | 144.6                             |
| 1941..... | 255,031 | 16,523 | 6.5                  | 148.6                             |
| 1942..... | 178,418 | 14,844 | 8.3                  | 127.6                             |

Throughout the war years, except for 1941, both the total crude death rate from communicable diseases and the fatality case rate were lower than in the last pre-war year. The improvement was on the whole continued in 1943. Conditions in war-time have not been altogether favourable to the control of communicable disease because of increased mobility of the population, overcrowding and poor housing conditions in some centres of war activity, and the shortage of medical and nursing personnel. So far, however, we have not had to record any set-back of major proportions in the health record. Figures for the fourteen principal communicable diseases separately are shown in Table IV.

\*The material in this section is summarized from the following sources: Report of the Department of Pensions and National Health, March 1941. A Statistical Survey of Public Health in Canada, compiled by Mr. J. T. Marshall, Chief, Vital Statistics Branch, Dominion Bureau of Statistics, Ottawa. State of Health of the People of Canada in 1942, J. J. Heagerty and J. T. Marshall, *Canad. J. Pub. Health*, 1943, 34: 529. Communication from Mr. J. T. Marshall on statistics of communicable diseases in 1943.

TABLE IV  
CASES AND DEATH RATES PER 100,000 POPULATION FOR THE PRINCIPAL COMMUNICABLE DISEASES IN CANADA, 1933-1943\*

| Cause   | 1933   | 1934   | 1935   | 1936   | 1937                                      | 1938   | 1939                   | 1940   | 1941   | 1942   | 1943   |
|---|--------|--------|--------|--------|---|--------|------------------------|--------|--------|--------|--------|
|   |        |        |        |        |   |        | <i>Number of Cases</i> |        |        |        |        |
| Measles.....  | 13,569 | 29,115 | 83,127 | 55,724 | 57,408                                    | 26,328 | 44,477                 | 45,851 | 81,051 | 25,258 | 60,485 |
| Rubella.....  | 835    | 1,395  | 25,029 | 69,401 | 3,377                                     | 1,618  | 1,799                  | 4,621  | 56,777 | 4,511  | 4,531  |
| Chickenpox.....                                     | 23,343 | 23,299 | 27,024 | 25,436 | 24,278                                    | 26,978 | 25,325                 | 32,758 | 27,867 | 30,914 | 30,453 |
| Smallpox.....                                       | 100    | 17     | 34     | 62     | 58  | 120    | 198                    | 11     | 26     | 6      | 6      |
| Mumps.....  | 8,080  | 8,460  | 21,548 | 23,368 | 14,441                                    | 8,401  | 5,844                  | 13,498 | 22,936 | 52,344 | 48,304 |
| Scarlet fever.....                                  | 10,009 | 16,234 | 17,677 | 21,232 | 16,746                                    | 16,916 | 15,179                 | 13,712 | 16,966 | 20,648 | 18,639 |
| Diphtheria.....                                     | 2,377  | 2,267  | 1,999  | 2,032  | 2,945                                     | 3,676  | 2,897                  | 2,335  | 2,866  | 2,955  | 2,804  |
| Whooping cough.....                                 | 14,622 | 19,484 | 17,991 | 16,319 | 17,396                                    | 16,003 | 17,972                 | 19,878 | 16,647 | 18,384 | 19,082 |
| Acute poliomyelitis and polio-<br>encephalitis..... | 253    | 520    | 364    | 978    | 3,905                                     | 577    | 359                    | 192    | 1,881  | 687    | 327    |
| Acute infectious encephalitis.....                  | 34     | 24     | 19     | 24     | 24  | 56     | 40                     | 32     | 1,133  | 81     | 43     |
| Cerebrospinal meningitis.....                       | 121    | 113    | 108    | 138    | 149                                       | 178    | 162                    | 374    | 1,465  | 765    | 516    |
| Influenza.....                                      | 8,181  | 1,902  | 6,054  | 6,796  | 64,429                                    | 2,226  | 18,395                 | 13,704 | 9,656  | 3,397  | 16,839 |
| Tuberculosis.....                                   | 8,447  | 8,187  | 8,767  | 8,638  | 8,472                                     | 9,090  | 10,182                 | 10,226 | 10,475 | 12,015 | 12,361 |
| Typhoid and paratyphoid fever.....                  | 2,340  | 2,331  | 1,970  | 1,823  | 2,257                                     | 1,835  | 1,317                  | 1,570  | 1,550  | 1,142  | 1,154  |
|   |        |        |        |        | <i>Death Rates per 100,000 Population</i> |        |                        |        |        |        |        |
| Measles.....  | 1.6    | 1.7    | 4.5    | 3.4    | 7.5                                       | 2.2    | 1.7                    | 1.5    | 2.8    | 1.1    | ....   |
| Rubella.....  | ....   | (2)    | 0.1    | 0.3    | 0.1                                       | (2)    | ....                   | (2)    | ....   | ....   | ....   |
| Chickenpox.....                                     | 0.3    | 0.3    | 0.2    | 0.3    | 0.2                                       | 0.4    | 0.2                    | 0.2    | 0.16   | 0.24   | ....   |
| Smallpox.....                                       | 0.1    | (2)    | (2)    | (2)    | (2)                                       | (2)    | (2)                    | ....   | ....   | ....   | ....   |
| Mumps.....  | (1)    | (1)    | (1)    | (1)    | 0.2                                       | 0.1    | 0.1                    | 0.2    | 0.2    | 0.4    | ....   |
| Scarlet fever.....                                  | 1.5    | 2.1    | 2.2    | 2.2    | 2.4                                       | 1.8    | 1.5                    | 1.1    | 1.0    | 1.1    | ....   |
| Diphtheria.....                                     | 2.2    | 2.1    | 2.4    | 2.3    | 3.3                                       | 3.9    | 3.0                    | 1.9    | 2.1    | 2.2    | ....   |
| Whooping cough.....                                 | 5.2    | 8.1    | 8.2    | 5.4    | 6.9                                       | 4.4    | 4.8                    | 5.5    | 3.8    | 4.8    | ....   |
| Acute poliomyelitis and polio-<br>encephalitis..... | 0.7    | 0.8    | 0.6    | 0.9    | 1.8                                       | 0.7    | 0.5                    | 0.4    | 0.6    | 0.5    | ....   |
| Acute infectious encephalitis.....                  | 0.5    | 0.4    | 0.5    | 0.5    | 0.5                                       | 0.4    | 0.4                    | 0.6    | 1.6    | 0.6    | ....   |
| Cerebrospinal meningitis.....                       | 1.0    | 0.8    | 1.0    | 0.9    | 0.8                                       | 0.8    | 0.7                    | 1.3    | 1.8    | 1.3    | ....   |
| Influenza.....                                      | 37.7   | 18.5   | 31.1   | 28.3   | 47.4                                      | 21.1   | 35.0                   | 24.5   | 21.0   | 10.5   | ....   |
| Tuberculosis.....                                   | 65.1   | 59.5   | 60.4   | 61.4   | 60.0                                      | 54.7   | 52.9                   | 50.9   | 52.8   | 51.5   | ....   |
| Typhoid and paratyphoid fever.....                  | 2.7    | 2.7    | 2.5    | 2.3    | 3.0                                       | 1.8    | 1.6                    | 2.0    | 1.4    | 0.9    | ....   |

\*Abbreviated from "A Statistical Survey of Public Health in Canada," 1941-1943 added. Revised by Vital Statistics Branch, D.B.S.

(1) Not tabulated separately. (2) Less than 0.1 per 100,000 population.

In spite of some increase in the number of reported cases, 1940 was on the whole a favourable year for mortality from communicable diseases. An exception was whooping cough, which showed more cases and a higher death rate than in previous years. The particularly marked reduction in the death rate from pneumonia indicated the beneficial results of new methods of treatment.

As already noted, 1941 was an epidemic year. The cases of simple measles were almost double the average over the last five years. The incidence of mumps and rubella was also high. The Provinces of Manitoba and Saskatchewan experienced an epidemic of two virus diseases, poliomyelitis and encephalitis. An epidemic of the former disease also occurred in New Brunswick. The case incidence and the death rate from diphtheria showed an increase. Influenza and pneumonia again showed marked decreases, but there was an upward trend in the mortality from tuberculosis, diarrhoea and enteritis.

There were no major epidemics in 1942, with the exception of localized outbreaks of diphtheria and scarlet fever. There was an increase in the incidence of chicken-pox and whooping cough, but decreases in the incidence of measles, typhoid fever, influenza, etc. The death rates from tuberculosis and pneumonia continued to decrease.

Influenza reached epidemic proportions in December 1943, with 9,900 cases reported. In the first six months of 1943, 21,300 cases of measles were reported. An outbreak in 1943 lasting from about March to July accounted for 47,600 cases with the peak in most provinces occurring in May, during which 16,341 cases were reported. There was also an increased incidence during the last three months of the year, concentrated primarily in Quebec and Ontario. With the exception of influenza and measles, there was, on the whole, an encouraging improvement in the state of health of the people, as reflected by the number of cases of communicable diseases reported. Slight decreases occurred in the number of reported cases of chicken-pox, diphtheria, dysentery, mumps and scarlet fever, while appreciable decreases were apparent for infectious encephalitis, erysipelas and meningitis. The incidence of poliomyelitis was more than cut in half from 1942 to 1943, while cases of septic sore throat declined more than 35 per cent. On the other hand, there was a slight increase in the number of tuberculosis cases and in those of whooping cough. On the basis of reported cases, the venereal diseases, both gonorrhoea and syphilis, increased appreciably.

Death rates from most of the leading causes of death are, even more than the total death rate, markedly affected by changes in the age and sex composition of the population. Studies are now in progress in the Vital Statistics Branch which will yield much more precise information about changes in mortality. In the meantime, it is perhaps worth while making a few preliminary remarks about tuberculosis, still a leading cause of death and one which affects certain age groups much more than others. The last decade has seen a great reduction in the crude death rate from tuberculosis, but in the war years 1941 and 1942 progress seemed to be slowed down. Exami-



nation of female deaths from tuberculosis by age from 1932 to 1942 suggests that the fall in mortality among younger women from 15 to 29 years has been greater than appears from the crude death rate. The death rate in each of the five-year age groups mentioned fell by about a third in the ten years ending in 1942. From 20 to 29 years mortality of 1941-42 was well below any previous year, but from 15 to 24 years the death rate was about stationary from 1940 to 1942. Possibly greater employment opportunities and longer hours of work for very young women have been responsible for slowing down the rate of progress of previous years.

#### SUMMARY

The most outstanding feature of the war years has been the increase in marriages and, in consequence, in first and second births. Increase in employment opportunities would in any event have seen many marriages taking place which were postponed during the depths of the depression. The first stages of full mobilization for war effort provided additional stimulus to earlier marriages. While there is some evidence of a temporary slackening in the rate of fall in family size, there is no reason to believe there has been any pronounced change in the trend towards smaller families. Marriages and births have already passed their peak, the former in 1942 and the latter in 1943.

The decade preceding the war saw a marked improvement in the health of the Canadian people as evidenced in the mean expectation of life in 1940-42. On the whole the improvement has continued during the war years. Improvement has been greatest in maternal mortality, some aspects of infant mortality, and mortality from pneumonia and influenza. Two contributory factors are believed to have been (a) improved nutrition of mothers during pregnancy and (b) recent advances in medical methods. Deaths from enemy action have not been dealt with in the present article. Inconsiderable during the first years of the war, they increased sharply during 1942 and 1943 and are likely to be high while the war is being carried into enemy territory. As regards other aspects of the mortality and morbidity record, it is evident that there is no room for any slackening in public-health programs if Canada is to continue to progress towards the mortality level of the most advanced countries.

# Canadian Journal of Public Health

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## BRITAIN'S PROPOSED SOCIAL SECURITY PROGRAM

LAST September the British Minister of Reconstruction outlined to Parliament a great social security plan which would affect every man, woman, and child in Great Britain. A comprehensive scheme of social insurance, presented in the form of a White Paper, it provides for unemployment and sickness insurance, health insurance, widows' pensions, retirement pensions, family allowances, orphans' allowances, motherhood grants, and death grants. Basically the plan, which is described as the greatest social security charter ever introduced by any government in any country, seeks to banish extreme poverty from Britain and to promote the welfare of the country's 47,000,000 people. While a report of the British Medical Association in 1928 proposed an extension of national health insurance to include the families of employed persons and to provide a more complete medical service, the proposed Government plan would provide benefits for all persons.

Under the plan, the population would be divided into six classes: employees, self-employed, housewives, adults who do not earn, children, and people over working age. Those below working age would be provided for by family allowances; those of working age, by insurance benefits; and those beyond working age, by retirement pensions. Large numbers of people not previously covered by insurance will be included.

In addition to health services for everyone, the new plan would provide motherhood grants of £4 (about \$18), plus benefits up to 36 shillings (\$8.10) weekly; unemployment and sickness pay of 40 shillings (\$9) weekly for a married couple and 24 shillings (\$5.40) for a single person; family allowances of 5 shillings (\$1.22) and "things in kind"—such as school meals and milk—weekly, for the first thirteen weeks; and orphans' allowances of 12 shillings (\$2.70) weekly. Special provision is made for the blind, and for subsistence money for persons taking "approved training".

The plan proposes the following standard weekly rates for sickness and unemployment benefits: for a married couple, 40 shillings (\$9); for a single person, 24 shillings (\$5.40); and for boys and girls of 16 and 17 years of age, 15 shillings (\$3.37). Sickness benefits would continue for three years, after

which they would be replaced by an invalidity benefit of 35 shillings (\$7.78) for a married couple and 20 shillings (\$4.50) for a single person. Unemployment benefits would be paid for a maximum of thirty continuous weeks, with additional days for those with a good record of previous employment.

For the first year the estimated cost of the plan, including health insurance, is £650,000,000 (\$2,925,000,000). It is expected that ten years later this will have increased to \$3,289,000,000. Apart from family allowances, which are to be met wholly out of taxation, contributions will be made by the insured, his employer (if he has one), and the State. Each insured person will pay a single weekly contribution for all benefits, in the form of one stamp on a single document. While a Minister of Social Insurance would be responsible to Parliament for the administration both of assistance and of insurance, the two divisions would function as separate units.

The proposals are, in part at least, the Government's answer to the Beveridge plan which was presented last year. Briefly, that plan proposed allowances for children, a complete national health service, and freedom from unemployment. It called for a family allowance of 8 shillings (\$1.80) instead of 5 shillings (\$1.22) for each child after the first. Weekly contributions of 4 shillings and 3 pence (about 95 cents) would be made by the main class of workers, whereas the Government plan proposes a figure of 3 shillings and 10 pence (about 86 cents). It is estimated that, for the first year, the Beveridge plan would cost \$3,138,000,000, as against a figure of \$2,925,000,000 for the Government plan.

A number of features of the plan as relating to health insurance have aroused concern among the medical profession—including, among others, the extension of benefits to all persons, the fear of the development of a salaried medical service, the position of the voluntary hospitals, and the method of payment of consultants. From the public-health standpoint, there appears to be some needs not adequately met by the present provisions. However, although differences of opinion are marked and important changes undoubtedly will be made, it is almost unanimous that these further measures for social security must receive immediate consideration. In a recent editorial, the *British Medical Journal* has expressed its appreciation of the needs, as follows: "It is evident that both these White Papers are, in a sense, interim documents. A bold map has been drawn, but many topographical details remain to be filled in. . . . Those who can sense the coming time feel that these social security plans are as necessary in peace as victory in war, and that without them the fruits of victory will be soured. So long as security is looked upon as a right which the citizen has to deserve and earn, and so long as he makes an insurance payment for it, then such plans, fulfilled, may act as a stimulus and not as a deterrent to the effort which this country will have to put forth in the years to come."

We in Canada will follow with the greatest interest the deliberations of the British Parliament in the development of these proposals, for we are faced with the same problems and, as in Great Britain, there is the conviction that further measures for social security must be provided.

## Association News

### REPORTS OF THE VITAL STATISTICS SECTION\*

#### REPORT OF THE COMMITTEE ON CERTIFICATION OF CAUSES OF DEATH

THE activities of this committee have of necessity been curtailed during the past five years. Nevertheless, much has been achieved by the continuation of interest in the several phases of its work. Indeed, collaboration and consultation with the Dominion Bureau of Statistics have been maintained and the position of the committee and the Section in relation thereto, materially strengthened.

##### *Efforts Toward Improving Mortality Records*

The efforts of this committee have, from its inception, been directed toward improving the accuracy and usefulness of vital statistics by increasing the completeness and accuracy of the data recorded by physicians on official forms. This the committee sought to do principally in two ways: first, by modifying the medical questions relating to cause of death so that the facts required would be more readily understood by physicians and more satisfactorily recorded, and second, by encouraging the education of medical students in the principles and practice of death certification.

That an important measure of success has been achieved in both of these objectives is well known. The phrasing of the medical questions on cause of death on the official death certificate, proposed by this committee following most careful study, was accepted by all provinces following a conference of the Dominion Bureau of Statistics with representatives of the provincial registrars and medical officers of health, in 1934. The medical certificate of death containing the new phraseology and questions came into operation throughout Canada in 1935.

The efforts of the committee to advance the teaching of vital statistics saw the development of a special exercise on death certification which the Association has supplied for use in all medical schools. Further, the committee assisted the Dominion Bureau of Statistics in the development of its Physicians' Handbook on Death Registration and Certification, a publication which has proved of great value in the teaching of medical students in medical schools throughout Canada.

##### *Physicians' Handbook on Death Registration and Certification*

Much remains to be accomplished by education. With this in mind there was constituted at the Section conference last year a Sub-Committee on Revision of the International List of Causes of Death, under the chairmanship of Dr. J. Wyllie. This sub-committee has been entrusted also with the

\*Presented at a conference of the Vital Statistics Section, held in the Chateau Laurier, Ottawa, on September 25, 1944.

responsibility for pursuing plans to advance the teaching of vital statistics with particular reference to the education of medical students in the principles and practice of death certification.

During the past year this sub-committee, whose report is presented separately, has collaborated with the Vital Statistics Branch of the Dominion Bureau of Statistics in the revision and preparation of a new edition of the Physicians' Handbook on Death Registration and Certification shortly to be published. Consideration has also been given to the introduction of changes in the exercise on death certification made available by the Association for use in medical schools.

#### *Stillbirth Registration and Certification*

There are still many problems to be solved in respect of stillbirth registration and certification. This sub-committee, under the chairmanship of Dr. E. Couture, has been actively engaged during the past two years in considering these problems and especially in the development of a national plan for the classification of the causes of stillbirth. The full report of this sub-committee is presented separately. The sub-committee has considered further the national definition of stillbirth for statistical purposes, the allocation of live births under twenty-eight weeks' gestation, and rules of selection where joint causes are stated.

#### *Classification of the Causes of Morbidity*

The committee has in the past devoted considerable time to the consideration of methods for the classification of sickness and injury for statistical purposes. Many developments have taken place in the United States, Great Britain and Canada in this field in the past five years. Greater and more significant developments may be expected in the immediate future.

Because of the singular importance of this problem at this time, and not because it is an issue fundamentally different from that of classification of causes of death, responsibility for the work was assigned last year to a separate committee under the chairmanship of Dr. F. S. Burke. This committee's report will be presented independently.

The committee looks forward with confidence and believes that it can play a most significant part in the development of vital statistics throughout Canada.

W/C A. H. SELLERS, *Chairman*; F/L T. E. Ashton, Dr. M. R. Bow, Dr. E. Couture, Dr. C. W. MacMillan, Mr. E. S. MacPhail, Dr. Paul Parrot, Mr. J. D. B. Scott, and Dr. J. Wyllie.

#### INTERIM REPORT OF THE COMMITTEE ON FORM AND CONTENT OF ANNUAL VITAL STATISTICS REPORTS

**T**HE committee, after reviewing the extent of the field covered by annual reports, has decided that only an interim report could be presented until further study has been made.

At the present time the Dominion Bureau of Statistics publishes a vital statistics report and the nine provinces also put out annual reports in varying degrees of detail, some embodied in the health department's annual report. Also, most major cities publish annual vital statistics reports as part of their health officer's report.

Your committee should, therefore, work on three levels—federal, provincial, and local. In the July, 1944, issue of the American Journal of Public Health, Dr. Forrest Linder, Assistant Chief Statistician of Vital Statistics, U.S. Bureau of the Census, in an article on "International Vital Statistics of the Future," emphasizes the divergence in requirements in a very clear manner. The following is a quotation from this article:

"The fact that each unit in the governmental hierarchy, from the smallest town to the most global world organization, has an interest in vital statistics is no indication that these interests are the same. The smaller units of government need and can produce intensive and detailed analyses of local data. The work of each larger governmental unit becomes successively more *extensive* and correspondingly less *intensive*. No state vital statistics office could hope to duplicate the type of intensive demographic studies which can be made in a progressive city office. In such a local office, data can be tabulated on a tract basis and studied in relation to other tract data with a direct knowledge of pertinent local conditions. The data can be tabulated week by week or day by day, and if necessary, cases can be individually listed for exhaustive special investigation. The state office has the opportunity for more extensive analyses based on consolidated data for the whole state or upon the comparison of areas within the state. But to the degree that the state totals are a consolidation of heterogeneous data or that the comparisons involve noncomparable areas, the possibility of detailed study is lost. Similarly the work of our national agencies, based on interstate comparisons or on consolidated data for 48 states, loses in detail and validity as much as it gains in scope and generality. In the international field the extensivity of interest is so great and the data under consideration are so heterogeneous that it is difficult to make even the vaguest conclusion or the most general comparison."

As Dr. Linder points out, federal vital statistics reports have generality and wide scope but not as much detail and validity as would be expected in a state or provincial report. It would appear to your committee that a federal report should contain information which can be used to compare the vital statistics of Great Britain, the principal countries of the Empire, United States, France, Germany, etc., with those of Canada. In other words, it should contain material as similar as possible to the standard material contained in the reports of these countries. Of course, where there are factors of a significance that are peculiarly Canadian in character, they should be included in the tabulations.

On the other hand, except for material that is required for reference or comparison, facts pertinent to a provincial sphere should be left to the provincial reports to be analysed in detail. The tabulation might very well be done by Ottawa for the sake of uniformity and comparability but the data should be published by the provinces in their respective annual reports. The same principle should be carried out in regard to the local reports (that is, those of the major cities, etc.) as mentioned above. In other words, the principle would be to endeavour to have the three reports represent very completely

and in detail their respective sphere of usefulness. If the local authorities are given to understand that detailed data can be made available to them according to the local requirements, they will undoubtedly ask for cross-classifications of various types which would be too comprehensive to be included in either a provincial or in a federal report. It would appear to your committee that to follow this policy would be to stimulate the demand for statistics within each respective sphere so that each would be developed as a result.

Adoption of this principle would mean that there should not be too much rigidity in the type of tables printed, especially on the local level. Naturally certain basic tables should be prepared for the reports of all the three levels listed above. On account of the closeness to the local situation and the fact that local conditions change more rapidly than provincial or national, the idea of flexibility must always be borne in mind in drafting statistical tables.

Another idea and one that has a distinct relation to the foregoing is the release of report data in a manner similar to that used by the Census, first as preliminary and then final reports in predetermined series. This would allow the data to be released more quickly, for at the present time the annual reports are held until they are entirely inclusive. Of course, it would not be advisable to have too many series of tabular breakdowns but it would appear that certain ones could be adopted, as, for instance, general summary, births, general mortality, infant mortality and maternal mortality, accidental deaths, marriages, and stillbirths. At the present time the latest report released by the Dominion is for the year 1941. It must necessarily contain a good deal of material for reference purposes but as long as it is properly classified and released in series it should still be quite usable for reference purposes and would have the virtue of being much more timely.

Further progress cannot be reported until the committee is enlarged to include more members on each of the three levels who can give representative opinions and can assist in the formulation of specific recommendations.

Mr. J. D. B. SCOTT (*Chairman*), Dr. Mary A. Ross, and Dr. Ant. B. Valois.

#### REPORT OF THE COMMITTEE ON MEMBERSHIP AND ARCHIVES

THE committee is indebted to Mr. R. L. Randall, the Executive Assistant of the Canadian Public Health Association, for a list of members and those interested in the Vital Statistics Section of the Canadian Public Health Association.

This list is startling from several standpoints. In the first place, there are only twenty-nine members. It would seem that we should have at least one hundred, possibly one hundred and fifty members. An analysis reveals that ten members were provincial employees, two each in the Provinces of Quebec and Ontario and one each from the other provinces, with the exception of Alberta, where no one is listed as a member. Among the second largest



group were employees of the Dominion Government; of this number, six are members either from the Department of Pensions and National Health or the Dominion Bureau of Statistics. There were two members from the Air Force and none from the other services. Local departments of health had four members represented: Montreal, Toronto, St. Catharines, and Hamilton. The universities also had four: two from the School of Hygiene, University of Toronto; one from the University of Western Ontario, and one from the University of Manitoba. Only one life insurance company had a representative. Dr. Dunn is the sole member from the United States.

It was proposed that the committee be extended to include representatives from each of the following groups:

1. Employees of the Dominion of Canada.
2. Employees of the Provincial Governments.
3. Employees of local health departments.
4. University representation.
5. Interested organizations.
6. Members of international bodies, etc., interested in vital statistics.

Each member of the larger committee will be asked to try to stimulate membership within his respective group. If necessary, a questionnaire may have to be drafted and sent to prospective members enquiring as to their particular interests in and requirements from this Section.

Mr. J. D. B. SCOTT (*Chairman*), Dr. Mary A. Ross, and Dr. D. V. Currey.

#### REPORT OF STANDING COMMITTEE ON MORBIDITY CLASSIFICATION AND STATISTICS

SUBSEQUENT to the meeting of this Section a year ago the Ottawa members of your committee on the Morbidity Code have met many times, chiefly with representatives of the Armed Forces. Some of these meetings arose out of requests for alterations or amendments to the existing Morbidity Code.

After much discussion by the various bodies interested, including the Department of Pensions and National Health, it was felt that most of the complaints arose from the fact that the material gathered had not yielded any detailed medical information. The critics immediately decided that the code was at fault when in reality the chief fault lay in the fact that the material gathered had not yet been analyzed or studied and the results made known.

The size of this task may be realized when you learn that the Director of Records at Military Headquarters has already punched more than one and one-half million cards and his staff are at present working on a breakdown of the medical material. Your committee feels that this large-scale breakdown should bring to light the weaknesses of the Morbidity Code and give a lead to future amendments.

The Ottawa members of your committee have been very closely in touch with the trend of opinion and have resisted what they considered to be unnecessary additions to or alterations of the existing code, in view of the large number of cards already punched by the Armed Forces and the Department of Pensions and National Health.

In 1942-43, Colonel Davidson undertook to amend the Morbidity Code and asked suggestions from all Arms of the Service. Wing Commander Sellers submitted those indicated by the Air Force, which consisted of several new rubrics arising out of flying conditions. These were included, together with those thought necessary by other Arms of the service and printed in the second edition of the Book of Physical Standards published by Medical Headquarters, Army. On the whole, the amendments were not numerous and the structure of the code remained unchanged.

It was not those responsible for the statistics who demanded radical changes, because they felt that any upset in their present arrangements would cause confusion and destroy comparability. Moreover, most of the criticism and requests for changes came from specialist groups. At the same time the Records Division of the Department of Pensions and National Health informed us that they would not entertain widespread changes but would approve the inclusion of a few necessary additions to the existing structure, pointing out that they have been punching on the original code since the outbreak of the war and felt that changing now would confuse the issue.

From discussions arising in Wing Commander Sellers' branch of the service, he is led to believe that some clinicians are under a misapprehension concerning the function of the Morbidity Code and confuse it with a nomenclature of diseases, and he believes that this is responsible for some of the criticism. If I am quoting him correctly, his views are that the two perform different functions and are not necessarily related.

During all discussions the committee kept in mind the necessity of having an acceptable morbidity scheme for the future. They are also aware of certain shortcomings in the present code and have discussed renumbering and also alterations to Class 17 by providing a supplement thereto, in order that trauma of all sorts may be taken out in more detail. This latter point was debated in connection with war injuries but it was decided to make no changes due to the possible cessation of hostilities in the near future. However, as trauma is a common condition of civilian life, particularly in industry, a fairly comprehensive class covering all traumatic conditions should be kept in mind.

From the foregoing you will have gathered that considerable discussion has taken place on this important subject and considerable progress has been made. Further details of this progress will be made known to you as the conference proceeds.

Dr. F. S. BURKE (*Chairman*), F/L T. E. Ashton, Dr. N. E. McKinnon, Dr. A. H. Sellers, and Mr. J. T. Marshall.

## Books

**Medical Care of the Discharged Hospital Patient.** By Frode Jensen, M.D., Instructor in Medicine, Syracuse University College of Medicine; H. G. Weiskotten, M.D., Dean and Professor of Pathology, Syracuse University College of Medicine; and Margaret A. Thomas, M.A. New York: The Commonwealth Fund, 1944. 94 pages. \$1.00 (U.S. funds).

THE value of continuity of medical care under all circumstances is accepted. The truth is that such continuity does not exist in a great many cases either in hospitalized or non-hospitalized illness. Lack of requisite facilities and well-developed medical follow-up machinery as well as economic factors are responsible.

This book describes an experiment in medical care under which the range of a hospital's services was extended outside the institution. The work was undertaken by the Syracuse University College of Medicine after a preliminary study revealed that 90 per cent of the cost of hospitalization of patients on the medical ward of the University Hospital was for chronic illnesses and only one-third of the patients received satisfactory medical supervision after discharge.

The thesis of this report is: "The value of continuous medical care of patients, who are economically unable to employ a family doctor, by a competent physician who is familiar not alone with the patient's illnesses but also with the relevant emotional, social and economic factors." The program was conducted under the direction of an *extramural resident* with the co-operation of the several medical, health and welfare agencies in Syracuse, and covered the supervision of 902 *medically needy* patients.

This study demonstrated clearly that by extending medical supervision beyond the walls of the hospital the benefits of hospitalization could be sustained, length of stay in hospital reduced and readmission for treatment avoided. These observations are of great practical significance. The saving in hospital costs was about three times the cost of the experiment and sufficient beds were released to enable the treatment of three hundred more patients.

This book emphasizes the hospital as a focal point for community health service.

"The provision of home care for discharged medically needy patients is one further step toward a more economical and beneficial use of the hospital in the care of the indigent."

A. H. SELLERS.

**Handbook on Tuberculosis.** By W. H. Hatfield, M.D., Provincial Medical Director, Division of Tuberculosis Control, Provincial Board of Health of British Columbia. 139 pages. \$1.25. Copies may be obtained from the Division of Tuberculosis Control, Provincial Board of Health, 2647 Willow Street, Vancouver, B.C.

THERE has long existed a need for a small handbook dealing with the various problems associated with the prevention of tuberculosis. Everyone engaged in anti-tuberculosis work should have ready reference to the usual and necessary procedures, and also some knowledge of the disease itself. Dr. Hatfield has shown good judgment in giving at the beginning a short history of tuberculosis, as well as a brief outline of the anatomy of the thorax and the physiology of respiration. This book is most comprehensive, covering as it does, and in a manner easily understood, the aetiology, symptoms, diagnosis, treatment and social aspects of the disease. The necessary personal approach to the patient has been brought out, beginning at the clinic and ending with rehabilitation, the responsibility of industry and, last but not least, the patient's part not only in overcoming his personal problem but also the assistance he can give to the general program. The necessary adjustment in mode of life on the part of the patient and family is well described.

Too often the tuberculosis worker loses sight of the municipal and voluntary agencies. Much more use should be made of the facilities they provide. At the back of the book, the inclusion of a list of such agencies in British Columbia suggests the need for similar compilations for all provinces and cities.

All tuberculosis workers should welcome this little book, which contains a wealth of information concisely put together. It is especially recommended as a useful guide for medical internes, public-health nurses, and sanatorium staffs.

G. C. BRINK.

